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UNITED STATES
DEPARTMENT OF LABOR
MINE SAFETY AND HEALTH ADMINISTRATION
Metal and Nonmetal Mine Safety and Health

REPORT OF INVESTIGATION

Surface Nonmetal Mine
(Sand and Gravel)

Fatal Powered Haulage Accident
September 28, 2004

Ford Construction Company
Troy Plant
Troy, Obion County, Tennessee
Mine I. D. No. 40-02271

Investigators

Joel B. Richardson
Supervisory Mine Safety and Health Inspector

Donald H. Daniels
Mine Safety and Health Inspector

Jeffrey S. Moninger
Mechanical Engineer

Denise A. Coyle
Mechanical Engineer

Originating Office
Mine Safety and Health Administration
Southeast District
135 Gemini Circle, Suite 212: Birmingham, Alabama 35209
Michael A. Davis, District Manager

OVERVIEW

Bugard Nease, wash plant operator, age 64, was fatally injured on September 28, 2004, when he was washing the concrete pad at the wash plant. An amalgamated sand, gravel, and clay rock weighing about 160 pounds, fell approximately 22 feet from an incline conveyor belt striking him.

The accident was caused by the failure to recognize that large rocks loading onto an inclined conveyor belt created hazards for persons traveling or working under the belt. No guards, shields, or other protective devices were provided to protect persons from falling material while they traveled or worked in this area. Failure to replace a divider bar in the grizzly on the feed hopper allowed large rocks to pass through and contributed to the accident.

GENERAL INFORMATION

The Troy Plant, a sand and gravel operation, owned and operated by Ford Construction Company, was located off County Highway 21 about four miles west of Troy, Obion County, Tennessee. The principal operating official was John H. Ford, president. The mine normally operated one 10-hour shift a day, five days per week. Total employment was 10 persons.

Excavators were used to dig sand and gravel, mixed with clay, from a single bench. The material was hauled by truck about one mile to the wash plant where it was stockpiled. A front end loader was used to dump material through a grizzly into a feed hopper. A short feeder conveyor belt dumped the material onto the washer feed conveyor belt that transported it to the wash plant. The material was crushed, screened, sized, washed, and stockpiled. The finish products were sold for use in the construction industry.

The last regular inspection at this operation was completed on July 6, 2004.

DESCRIPTION OF ACCIDENT

On the day of the accident, Bugard Nease, (victim), reported for work about 6:30 a.m., his normal starting time. During the shift, he operated the wash plant without incident.

On a typical shift, Brian A. Bartz, front end loader operator, normally fed raw material into the feed hopper at the wash plant until about 3:45 p.m.. The screen and conveyors continued operating to empty all the material from the plant by the end of the shift. About 3:30 p.m., Bartz observed Nease using a hose to wash down the concrete pad for the wash plant as he did at the conclusion of each shift. Dwight E. Cox , truck driver, also observed Nease washing down the area at about the same time.

About 4:40 p.m., Jessie B. Lewis, lead man, Elbert Nease (victim's nephew), laborer, and Ira Turner, crusher operator, were working on top of the bag house at the asphalt plant. They noticed the wash plant conveyor belt was still running and saw that Nease's pickup truck was still in the parking lot. He usually left the property immediately at 4:30 p.m.

Lewis asked Turner to go to the wash plant to check on Nease. Turner found the victim lying face down, under the electrical switchgear, located under the wash screen feed conveyor belt. He drove back to the asphalt plant to tell Lewis about the accident. Lewis instructed Elbert Nease to call for assistance while he and Turner returned to assist the victim. They were unable to detect any vital signs.

A short time later, emergency medical personnel arrived. The county corner was summoned and pronounced the victim dead at the scene. Death was attributed to pneumothorax.

INVESTIGATION OF THE ACCIDENT

MSHA was notified of the accident at 6:00 p.m. CST on September 28, 2004, by a telephone call from Collie E. Berry, safety director/risk manager, to Harry L. Verdier, assistant district manager. An investigation was started the same day. An order was issued under the provisions of Section 103 (k) of the Mine Act to ensure the safety of the miners. MSHA's accident investigators traveled to the mine, made a physical inspection of the accident scene, interviewed employees, and reviewed conditions and work procedures relevant to the accident. MSHA conducted the investigation with the assistance of mine management and employees.

DISCUSSION

Location of the Accident

The accident occurred on a flat concrete pad located under an inclined conveyor belt at the wash plant. The weather was clear and dry.

Feed Hopper

Raw material was dumped into the 30 ton metal feed hopper through a grizzly designed to screen off oversized rocks. The grizzly was constructed of 36 inch long metal bars installed vertically about 10 inches apart. One vertical bar was missing from the grizzly screen leaving a 20 inch wide opening. Raw material dumped through the grizzly and fell onto a 12-inch steel I-beam located about 3 feet above the short feeder conveyor belt. The I-beam broke the material and lessened the impact on the belt. The opening at the bottom of the bin was 28 inches wide, four feet high, and was equipped with a vibrator.

Wash Screen Feed Conveyor Belt

The wash screen feed conveyor belt was 30 inches wide, approximately 83 feet long, and installed on a 17 degree angle. The conveyor traveled about 310 feet per minute and was approximately 22 feet above the concrete pad where the victim was working. The raw material that fed onto this conveyor belt usually included fine sand and gravel which would serve as a soft bed for the larger rocks. This fine material usually prevented rocks from bouncing and falling off the belt. Apparently, the rock observed near the victim fed onto the conveyor after most of the smaller material had emptied from the hopper. This could have enabled the large rock to bounce off the belt and fall to the ground.

During the testing of the belt's speed, rocks were individually placed on the conveyor belt. After traveling a short distance, they would bounce and fall off the belt. Although none of the rocks tested would travel the distance where the victim was believed to be struck, evidence indicated that a number of rocks had spilled off the belt during the shift. The investigators observed that large rocks did pass through the screen, load onto the conveyor belt, and subsequently fall to the ground.

Training and Experience

Bugard Nease had 17 years and 24 weeks mining experience all at this operation. He had received training in accordance with 30CFR, Part 46.

ROOT CAUSE ANALYSIS

A root cause analysis was conducted and the following causal factors were identified:

Causal Factor: Mine management failed to recognize that large rocks loading onto the steep inclined conveyor belt created hazards for persons traveling or working under the belt.
Corrective Action: Management should examine work sites to determine if any hazards are present. Guards, shields, or other protective devices should be installed to protect persons from flying or falling material from screens, crushers, and conveyor belts.

Causal Factor: Policies and controls were inadequate and failed to identify the missing metal bar on the grizzly for repair. The grizzly at the feed hopper was not included in the daily workplace examination. The missing bar in the grizzly enabled large rocks to pass onto the inclined conveyor belt.

Corrective Action: Daily examinations should include the grizzly. Damaged or missing bars should be replaced promptly.

CONCLUSION

The accident was caused by the failure to recognize that large rocks loading onto the inclined conveyor belt created hazards for persons traveling or working under the belt. Guards, shields, or other protective devices were not provided to protect persons from falling material while they traveled or worked in this area. Failure to replace a divider bar in the grizzly on the feed hopper allowed large rocks to pass through and contributed to the accident.

VIOLATIONS

Order No. 6099650 was issued verbally on September 28, 2004, followed with a written order on September 29, 2004, under the provisions of Section 103 (k) of the Mine Act:

> A fatal accident occurred at this operation on September 28, 2004, when a rock fell from the incline conveyor striking the victim as he was washing out under the conveyor. This order is issued to assure the safety of all employees at this operation. It prohibits all activity at the new wash plant until MSHA has determined that it is safe to resume normal operation in this area. The mine operator shall obtain prior approval from an authorized representative before he restores operations in the affected area.

This order was terminated on October 1, 2004. The conditions that contributed to the accident no longer exist and normal mining operations can resume.

Citation No. 7750205 was issued on October 22, 2004, under the provisions of Section 104(a) of the Mine Act for violation of 30 CFR 56.14110:

> A fatal accident occurred at this operation on September 28, 2004, when a rock fell approximately 22 foot from an incline conveyor striking the plant operator. The conveyor was running and the plant operator was using a water hose to wash out under the screening tower at the time of the accident. Guards, shields, or other protective devices were not provided to protect persons from being struck by

falling material while working or traveling in this area.

This citation was terminated on October 26, 2004. The mine operator installed a protective device on the inclined conveyor belt. A 12 inch high wire screen was welded on both sides of the conveyor to protect persons from flying or falling material.

Approved by:_____ Date:_____

Michael A. Davis
District Manager

APPENDIX A

Persons Participating in the Investigation

Ford Construction Company

Michael A. Harrison	plant supervisor
Jessie B. Lewis	mechanic-lead man
Collie E. Berry	safety director

Mine Safety and Health Administration

Joel B. Richardson	supervisor mine safety & health inspector
Donald H. Daniels	mine safety and health inspector
Jeffrey S. Moninger	mechanical engineer
Denise A. Coyle	mechanical engineer